

# Planning for Marcellus Shale Development and Impacts: 2009 PPA Conference

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# PSU Marcellus Education Team

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## Position Statement:

“The Penn State Marcellus Education Team helps individuals, families, businesses, public officials, and communities throughout Pennsylvania better understand and act upon the opportunities and challenges arising from Marcellus Shale and its development. We are committed to providing unbiased, research-based information.”

# Process & Impacts

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# Outline

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- Possibilities here in Pennsylvania
- Implications for local governments, agencies, organizations

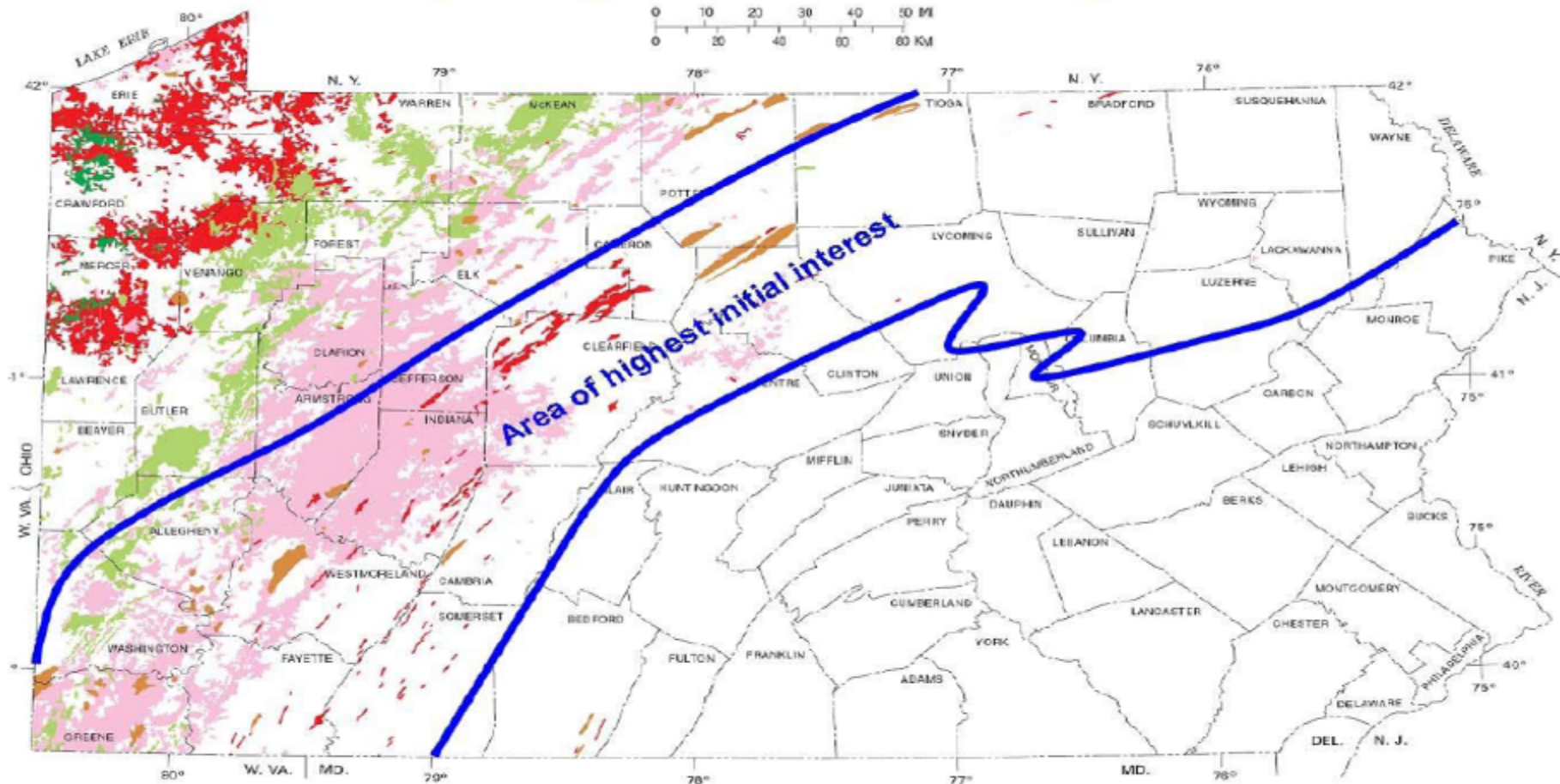
# A Few Background Concepts

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- Scale of this may be **BIG**
- Resource-based economic development; when it's gone, it's gone
- Local impact- multiplier effects if keep dollars local
- How ensure "winners" pay fair share of increased taxes & costs?

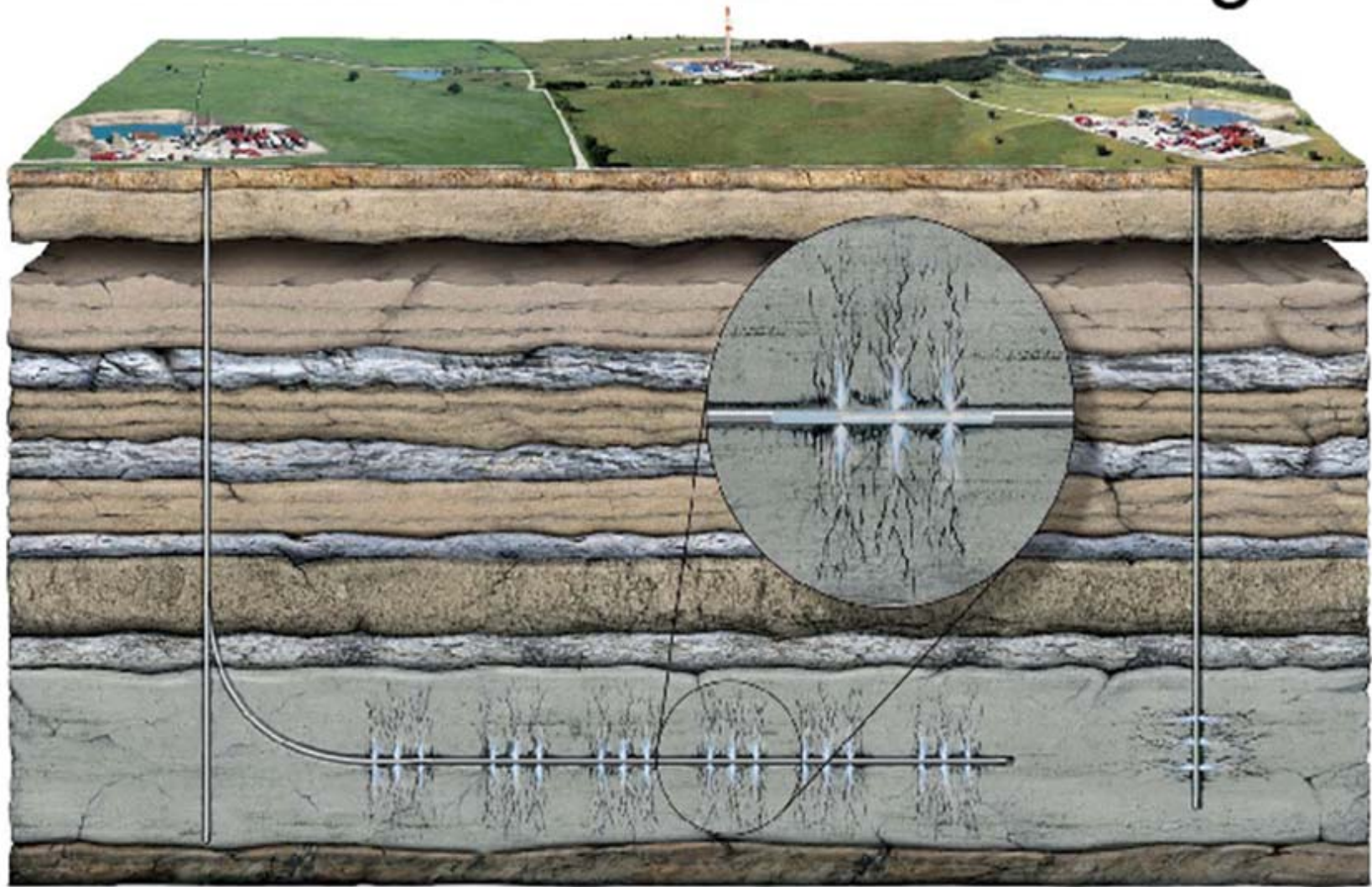
# Where is the Interest?

**Map of Pennsylvania Oil and Gas Fields**  
Showing area of highest interest for Marcellus Shale exploration



EXPLANATION				
				
Shallow oil field	Deep oil field	Shallow gas field	Deep gas field	Gas storage area

# Vertical vs. Horizontal Drilling



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ED INFORMATION

**natural gas**  
Marcellus Education Team  
[www.naturalgas.psu.edu](http://www.naturalgas.psu.edu)

# Larger Well Sites Needed for Bigger 'Fracs

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# Well Site



# Heavy Truck Traffic

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- Basic Drilling Equipment (70+ loads)
  
- Water
  - 364 water truck trips
  - 1 – 4 million gallons needed
  - Equivalent to 3,494,400 car trips  
(Denton County Oil & Gas Task Force)
  
- After well completion, regular trips for brine water

# Heavy Equipment Intense

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# Pipeline Infrastructure



# Compressor station used to increase gas pressure into pipeline



Picture courtesy Fortuna Energy





# Impacts from:

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- Well sites & drilling

- Fracing



- Pipelines that connect wells to market

- Transportation



- Potential influx of workers & businesses



# Three Phases of Natural Gas Development

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## **Development Phase** (Short Lived/Labor Intensive)

- Well-pad and Access Road Construction
- Local collection pipeline Construction
- Drilling of the Well
- Fracturing of the Well
- Reclaiming some Disturbance

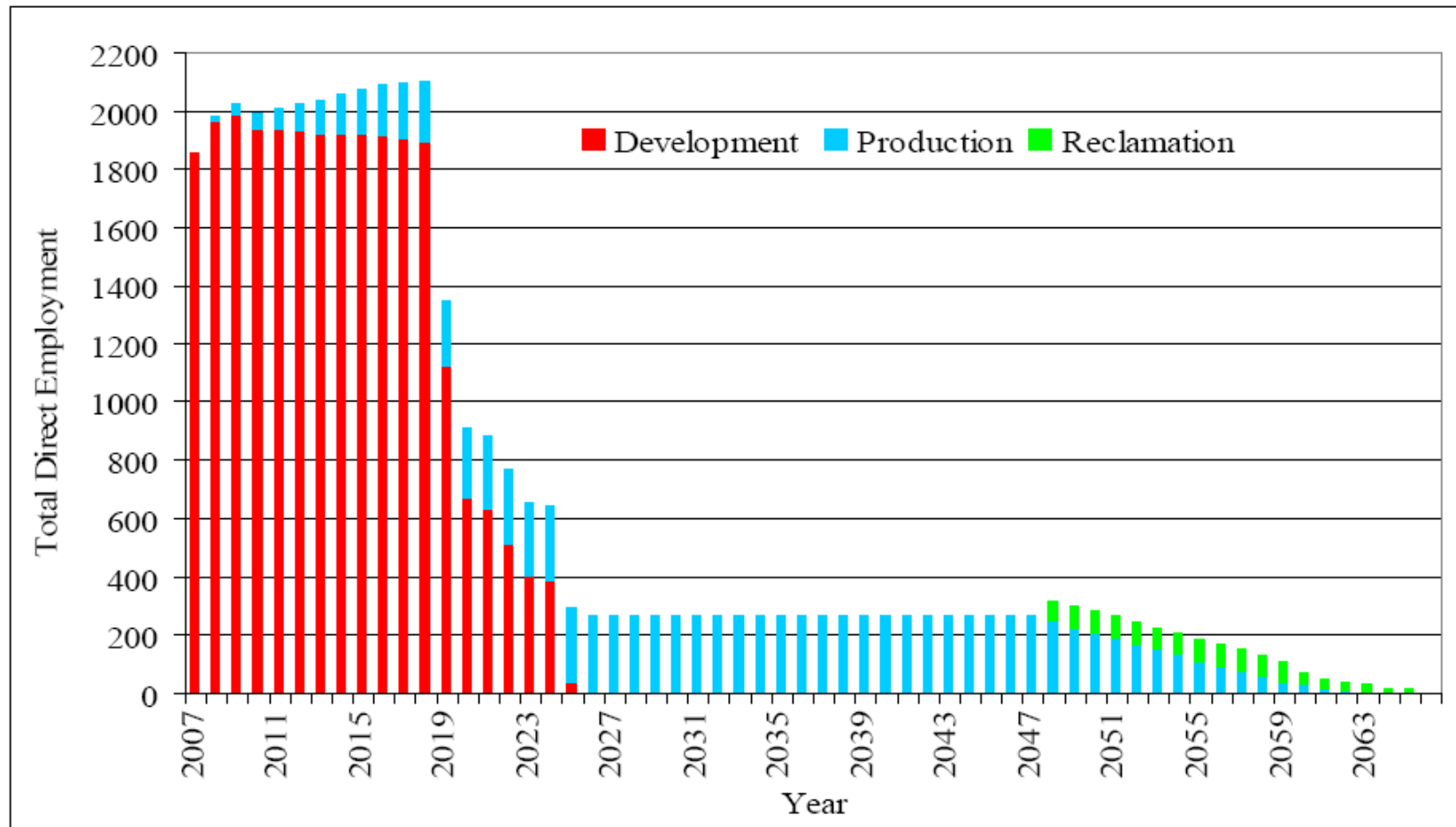
## **Production Phase** (Long lived/Small & Steady Labor Force)

- Trucking Water and condensate from Well Site
- Monitoring Production
- Occasional Well Work-Overs (partially re-drill/re-frac)

## **Reclamation Phase**

- Dismantle and Reclaim well-sites

# Jonah/Anticline Fields Direct Workforce Through The Three Phases:



Graph: Ecosystem Research Group/Jacquet

# Overall Economic Impact

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- Estimated \$1.2 trillion +/- in recoverable natural gas in Pennsylvania - *NOT uniformly distributed across the Commonwealth*
- Total Earnings across ALL Industries (2007)
  - Pennsylvania - \$355 billion
  - *PA counties with Marcellus - \$161 billion*

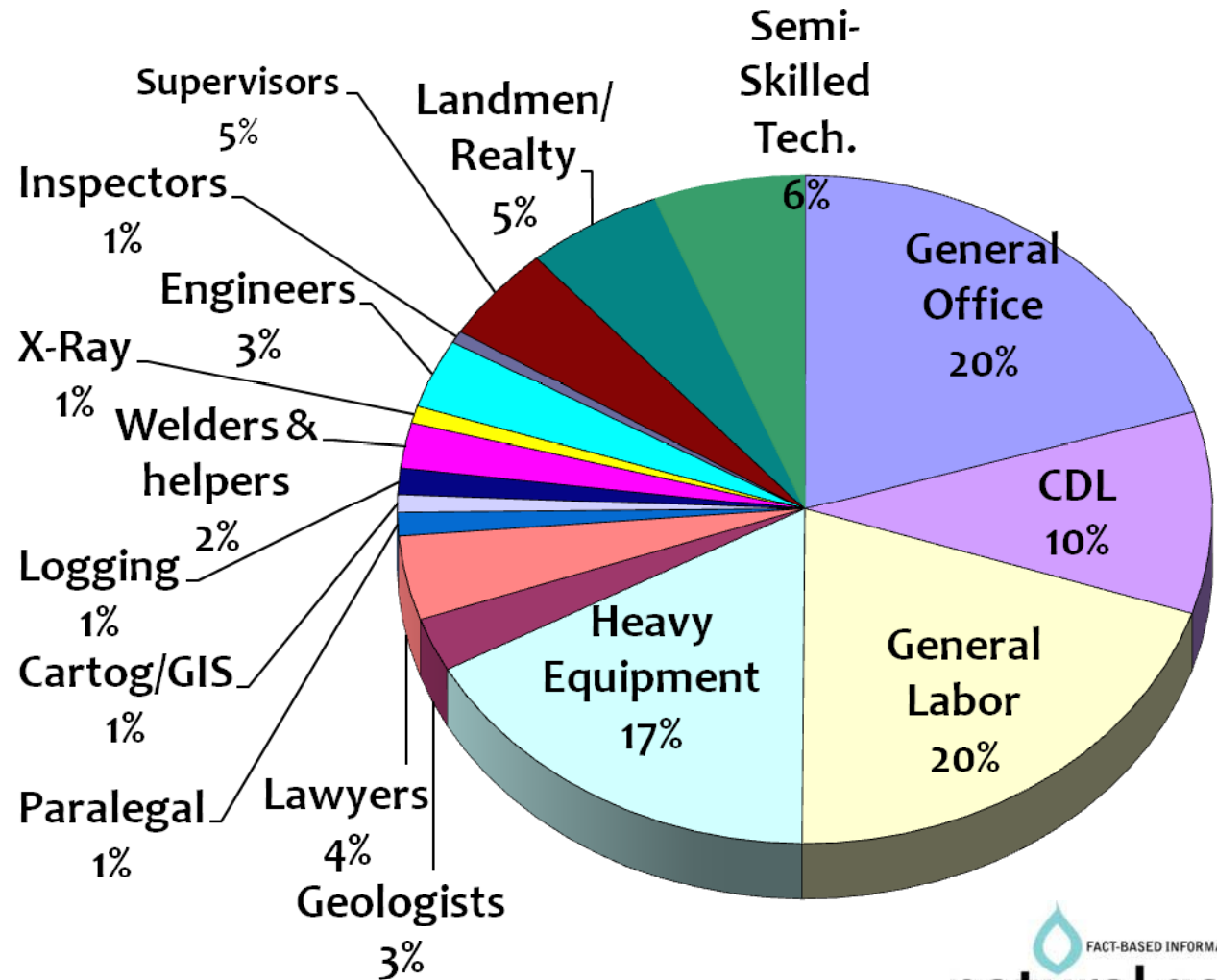
# 1. Business Activity Impacts

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- Drilling each Marcellus well requires:
  - More than 410 individuals
  - Almost 150 different occupations
  - 11.5 full time direct jobs
- Once drilled, each well generates 0.17 long-term full-time jobs
- + Indirect employment impacts

# What Specific Jobs are Required for Drilling a Well?

- Over 75% only require high school degree or specialized training
- Less than 25% require college or advanced degree



# *Opportunities/challenges in Pennsylvania:* **Economic & Workforce**

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## **Businesses**

- Existing local businesses benefit?
- 'New' local businesses?
- Attract outside businesses?

## **Workers & Residents**

- Local residents/workers **HAVE** the skills?
- Locals **LEARN** the skills?
- Youth **LEARN** the skills & stay?
- Newcomers to move into county?

## **Impacts on other sectors – tourism?**

# Effects on Forests and Wildlife

- ❑ Effects on timber resources
- ❑ Habitat disturbance and fragmentation
- ❑ Changes in wildlife composition



Allegheny National Forest

Source: <http://www.alleghenydefense.org>

# Community and Local Government Issues

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- ❑ Roads & Bonding
- ❑ Water
- ❑ Population growth and change
- ❑ Infrastructure
  - emergency preparedness
  - human service, education
- ❑ Housing needs
- ❑ Cultural change (conflicts?)
- ❑ Economic development
- ❑ Environmental impacts
- ❑ Workforce development opportunities

# Community & Local Government

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- *Little* local revenue impact
  - Natural gas is NOT subject to local taxes
  - Earned Income Tax paid where people live
  - Potential Severance Tax dollars would go to the state unless there is a local sharing formula
- Service impacts may be large
- Little regulatory control over drilling
  - *Much is preempted by Oil & Gas Act*
  - *IF given clear right to Zone where drilling occurs, it could increase conflict over land use*

# Regulatory Authority

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- PA Oil & Gas Act Preemption
- **“Except with respect to ordinances adopted pursuant to the . . . Municipalities Planning Code, and the . . . Flood Plain Management Act, all local ordinances and enactments purporting to regulate oil and gas well operations regulated by this act are hereby superseded.**

# Regulatory Authority

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- **No ordinances or enactments adopted pursuant to the aforementioned acts shall contain provisions which impose conditions, requirements or limitations on the same **features** of oil and gas well operations regulated by this act or that accomplish the same **purposes** as set forth in this act.”**

# Regulatory Authority

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- PA Supreme Court Opinions
  - Borough of Oakmont
    - Restriction on oil and gas wells in R-1 zoning district was not preempted by Oil and Gas Act.
  - Salem Township
    - Subdivision and land development ordinance was preempted by Oil and Gas Act.

# Could transform Pennsylvania communities – *but for the better or worse?*

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## ***Requires careful decision-making about:***

1. Thinking long term, not just short term gain
  - Monitoring, understanding & mitigating environmental impacts
  - How can this be used to improve Pennsylvania in long run? Other industries this could attract?
2. Encouraging dollars to stay local
  - Workforce training
  - Business development
  - Housing

# Could transform Pennsylvania communities – *but for the better or worse?*

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3. Manage the 'Boom' without having a 'Bust?'
  - "Short term" housing & worker needs?
  - Plan NOW for when the gas no longer flows
  
4. Need for monitoring, adapting regulations and recommended practices
  - Social and cultural change
  - Revenue sharing
  - Environmental remediation and use of conservation practices

# Effective Responses Will Require...

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- ❑ Coordination and communication - among partners, jurisdictions, agencies, organizations, related and ancillary businesses
- ❑ Broad public awareness and understanding
- ❑ Resident and taxpayer acceptance and support
- ❑ On-going dialogue and participatory decision-making

# Planning For Impacts

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# Why Plan for Impacts?

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- Strive for Planning Versus Reacting
  - Anticipate negative impacts
    - Avoid or minimize
  - Anticipate positive impacts
    - Attract and maximize
  - Planning gives you advantages
    - Economic development marketing
    - Documents what is expected
    - Provides a basis for better decision making

# Associated Tasks

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- Become Informed and Educated
- Assess Your Ability to Plan or Take Action
- Identify Stakeholders
- Establish Good Communication and Relationships
- Take Appropriate Actions

# Become Informed & Educated

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- The natural gas development process and timeframes:
  - Leasing: 4-6 months
  - Exploration/Seismic: 4 months
  - Site Preparation & Drilling: 4 – 8 weeks
  - Site Reclamation: 2 weeks
  - Extraction & Transport: 5 – 35+ years
  - Maintenance: Life of the well: 5 – 35+ years
  - Closure

# Things to Know

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- Principle Regulatory Entities
- State Agencies
  - Dept of Environmental Protection (DEP)
  - Fish & Boat Commission
  - PA Emergency Management Agency (PEMA)
  - Dept of Conservation & Natural Resources (DCNR)
- Two Federal Commissions
  - Delaware River Basin Commission (DRBC)
  - Susquehanna River Basin Commission (SRBC)

# Things to Know

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- Potential Impacts:
  - Environmental
  - Economic
  - Cultural
  - Municipal services and infrastructure
  - Land use
  - Community
  - Educational services

# Things to Know

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- Contact Information For:
  - Gas industry representatives
  - Regulatory agency personnel
  - Identified stakeholders
  - Educational/support entities
    - Cooperative Extension
    - Associations

# Assess Your Ability to Plan & Take Action

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## □ Know:

- Your limitations and opportunities
- What isn't regulated or regulated in a limited capacity

## □ Inventory:

- Existing ordinances & documents and determine need to update or create new

# Assessment

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## □ Document:

- What is important to you and determine if it is impacted by the natural gas industry
- What authority do you have over it
- If none, what are other non-regulatory options

# Data Needs

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## □ For Planning:

- Determine your data needs relative to natural gas development, especially for short term planning
- Volume, rate and extent of activity
  - Permit activity (eNotice, eFacts, eMAP, regulatory agency websites)
  - [www.dep.state.pa.us/dep/deputate/minres/OILGAS/RIG09.htm](http://www.dep.state.pa.us/dep/deputate/minres/OILGAS/RIG09.htm)

# Data Needs

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- ❑ Gas industry projections
- ❑ Marcellus Shale Education Training Center/CPWDC Workforce Needs Assessment 2009
- ❑ [www.pct.edu/msetc/](http://www.pct.edu/msetc/)
- ❑ Past activity and activity in adjoining communities
- ❑ Rig counts  
<http://gis.bakerhughesdirect.com/RigCounts/default2.aspx>

# Comprehensive Plan

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- Opportunity for Real World Planning
- Gives You Something to Strive For
- Sets Goals and Action Steps
- Documents
  - Existing conditions
  - Desired conditions
  - Priorities

# Comprehensive Plan

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- Contains Elements That Relate to Natural Gas
  - Development objectives/goals
    - Location, character and timing of future development
  - Land use
    - Amount, intensity, character and timing of proposed land use
  - Housing needs
    - Conservation of sound housing, housing rehabilitation, accommodation of expected new housing in different dwelling types and densities

# Comprehensive Plan

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- Transportation
  - Highways, local street systems, parking facilities, pedestrian and bikeway systems, railroad facilities
- Community facilities
  - Educational, recreation, municipal buildings, fire and police, water supply and distribution, sewerage and waste treatment, solid waste management, utility corridors

# Comprehensive Plan

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- Interrelationship of components
  - Estimate of the environmental, energy conservation, fiscal, economic development and social consequences to the municipality
- Short and long range plan implementation strategies
  - Capital improvements, new or updated regulations
- Plan compatibility
  - Compatible development with adjoining municipalities and consistency with the county plan

# Comprehensive Plan

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- Natural/historic resources protection
  - Wetlands and aquifer recharge zones, woodlands, steep slopes unique natural areas and historic sites
  - Shall be consistent with specified laws including Oil & Natural Gas Act
- Water
  - Availability, use and limitations, protection

# Ordinances

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- ❑ Zoning Ordinance
- ❑ Subdivision & Land Development Ordinance
- ❑ Official Map
  - Weight the limitations with your solicitor for gas industry regulation
  - Regardless of natural gas exemptions, can utilize land use regulations for spin-off development
  - Some areas may become more developable

# Roads

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- Road Bonding
  - Posting
  - Excess maintenance agreement
  - Permits
  - Inspections & monitoring
  - Security (bonding)
  
- Gas Industry Maintenance Agreement

# Other Municipal Plans

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- Capital Improvements Plans
  - Long term planning for:
    - Roads
    - Trucks
    - Equipment
    - Facilities
- Open Space and Recreation Plan
  - Potential natural gas development impacts

# Other Agency Plans

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- Business and Economic Development Plans
- Workforce Training
- Education Forecasts
- Long Range Plans:
  - School districts
  - Human service agencies

# Other Options

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- Strategic Planning
  - Document priority issues and goals and develop action plans
- Community Visioning
  - Community based prioritization of needs and strategies to meet them
- Resource Booklets
- Public Meetings, Forums

# Designation of Responsible Entity

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- Elected Official (Chair, Vice-Chair, etc.)
- Municipal Planning Commission
- Environmental Advisory Committee
- Task Force

# Identify Stakeholders

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- Need for Stakeholder ID
  - Communication
  - Coordination
  - Collaboration
  - Knowledge Base
  - Education
  - Resources
  - Possible Designation

# Potential Stakeholders

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## □ Potential Stakeholders:

- Landowners
- Residents
- Local natural gas-related businesses & subcontractors
- Educational institutions
- Chambers of commerce
- Governmental officials and agencies

# Potential Stakeholders

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- ❑ Conservancies and land trusts
- ❑ Environmental and sportsmen's groups
- ❑ Natural gas industry
- ❑ Regulatory agencies
- ❑ Emergency management agencies
- ❑ Others in your community?

# Establish Good Communication and Relationships

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- Have You Considered:
  - As a municipality or community as a whole, what is it that you want out of natural gas development?
  - What do you want your community to look like?
  - What is most important to your community?

# Communication Needs

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- Are there positive aspects about your community that you're not willing to give up?
- Are there positive aspects about your community that you are willing to give up on a temporary basis?
- Are there negative aspects about your community that could use some change?

# Communication Actions

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- Have You:
  - Documented the answers to these questions?
  - Shared this information with any of the players in natural gas development
    - Gas industry
    - Regulators
    - Legislators
    - Economic development organizations

# Communication Actions

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- ❑ Environmental organizations
- ❑ Citizens
- ❑ Landowners
- ❑ Community organizations
- ❑ Peers

# Communication

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- Communication is Key:
  - If you don't ask:
    - You don't know
    - You don't get
- Negotiate When You Don't Have Direct Authority
- Document What is Communicated as Applicable

# Take Appropriate Actions

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- Become Informed and Educated
- Assess Your Ability to Plan or Take Action
- Identify Stakeholders
- Establish Good Communication and Relationships
- Take Appropriate Actions
  - Correlation of tasks

# Group Exercise Activity

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# For more information:

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□ [www.naturalgas.psu.edu](http://www.naturalgas.psu.edu)

□ Written Materials

*Landowner Guide*

*Local Government Primer*

*Natural Resource Primer (spring)*

*Financial Management Primer (spring)*

*Fact Sheet series*

*Includes "Organizing a Community Task Force"*

# Contact Information

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# Questions?

[naturalgas.extension.psu.edu](http://naturalgas.extension.psu.edu)

